

BUBBLE & FIZZ

WEEK 2: MOUNTAINS

EVER WONDER . . . HOW MOUNTAINS ARE FORMED?



What we learned this week:

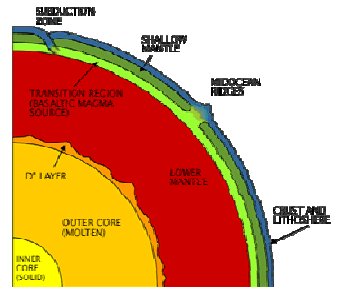
- ◆ The Earth has three layers: the core, the mantle and the crust.
- ◆ The Earth's crust is made up of several major plates that float and move.
- ◆ Mountains are formed when these plates press against each other or pull apart, or when magma pushes up against the crust.

Today's Experiments

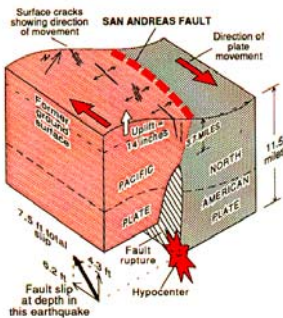
1. Put together a puzzle of the Earth's tectonic plates.
2. Create a model of the Earth's layers.
3. Experiment with plate tectonics.
4. Make mountain formation models.

Did you know?

- ◆ Mountains are found on every continent. Most are in long chains called "ranges" -- like the Rocky Mountains, a range that extends from Canada to the state of New Mexico. But some mountains are single peaks, like Mt. Rainer in Washington State.
- ◆ To understand mountains, we need to understand the layers of the earth. The innermost layer is the core -- it is believed to be made up of iron and nickel. The core is surrounded by the mantle, which is made up of magma (molten rock). Beyond the mantle is a thin crust, which is the outermost layer that we live on.



- ◆ The Earth's crust is broken into several major plates that float on the layer of magma beneath. Most of the time we don't feel these plates moving – but sometimes we feel a sharp movement that causes the earth to shake; this is an earthquake. Earthquakes occur along "fault lines" – the space between moving plates. Movement in the San Andreas fault in California, for example, has caused many major earthquakes. This fault line lies between the North American Plate and the Pacific Plate. The huge earthquake of 1906 happened when the plates forming the San Andreas fault moved horizontally past each other more than 21 feet!



- ◆ Folded mountains occur when 2 plates press against each other; the Himalayan mountain range (home to Mt. Everest) is an example. Dome mountains form when magma pushes up under the earth's crust. Volcanic mountains occur when magma



erupts as lava, then cools down and hardens; Mt. St. Helen's in Washington

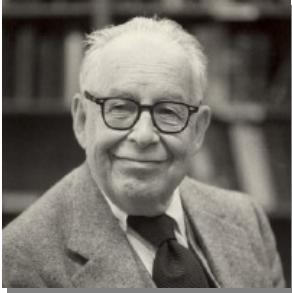
State is an example. Fault-block mountains have a steep side and a gentle side and form along cracks (faults) in the crust. Underwater mountains form where 2 plates are pulling apart; magma fills in between the plates and cools down into solid rock.



- ◆ The world's highest mountain is mostly underwater -- Mauna Kea in Hawaii. It is 33,675 feet if measured from the ocean floor to the top, but only 13,796 feet if measured from sea level. More than half of Mauna Kea is underwater! In fact, many islands, like the Hawaiian Islands, are actually mountains sticking up out of the water.
- ◆ Geologists use seismographs to measure the vibrations produced from an earthquake. A seismogram is the printed piece of paper from a seismograph that shows the amount of energy released.



Amazing Scientist



Charles F. Richter, Ph.D. (1900-1985). When Dr. Richter was only 6 years old, there were three major earthquakes in the world. Though he did not experience them first hand, they appear to have had a huge effect on him. He worked very hard in school and eventually earned a Ph.D. in theoretical physics from Cal Tech. He devoted the rest of his life to studying the movement of the Earth's surface. He even had a seismograph installed in his living room so that he could monitor earthquakes from home. He also learned six other languages so that he could study other scientist's notes without translation! He is most famous for inventing the "Richter Scale," the scale by which the intensity of earthquakes is measured. He has also saved many lives by helping communities in earthquake-prone areas design safer buildings.

Curiosity @ Home

Make another batch of dough at home to make additional mountain models. Materials: flour, water, salt, bowl, spoon, plate. Procedure: Add $\frac{3}{4}$ cup flour and $\frac{3}{4}$ cup salt to your tray and stir. Add $\frac{1}{2}$ cup water and mix. Your mixture should feel like bread dough. Add a little more water if needed. Put the dough on a plate to make mountain formations. Add red food coloring to your dough to make lava for a volcano model. Models of the earth, tectonic plates and different types of mountains would make an excellent science fair project!

Word Scramble

Can you unscramble these words from today's class?

MAAMG

_____ (the molten rock that makes up the Earth's)

STONAIN

_____ (formed when the Earth's plates move or magma pushes against the crust)

TANLEM

_____ (layer between the Earth's core and crust)

ERCO

_____ (the center of the Earth)

CHIRRET

_____ (scientist who invented the scale we use to measure Earthquakes)

TALPE

_____ (the Earth's crust is made up of six major ones)

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